UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

SUMMARY REPORT

OF

ALVIN REVIEW COMMITTEE WORKSHOPS AND MEETINGS

December 7, 1986
San Francisco, California

CONTENTS

Summary Report of ARC Workshop
Summary Report of ARC Meeting

APPENDICES

I. Letter Announcement of Workshop, October 23, 1986
II. Schedule ALVIN Operations 1986 (dated 6 Nov. 86)
III. Letter re. U.S.-France Ridge Crest Processes Studies
IV. Notification of Intent Summary, 1983-1985 Submissions
V. Notification of Intent Summary, 1986 Submissions
VI. Summary of ALVIN Shiptime Request, December, 1986
VII. ALVIN Operation Schedule for 1987 (17 Mar. 1987)

UNOLS

ALVIN Review Committee

Summary of Workshop

December 7, 1986
San Francisco, California

Forward: The Chairman, ALVIN Review Committee, in his letter of October 23, 1986 (Appendix I), announced to the ALVIN user and oceanographic communities a workshop to generate planning information for ALVIN/ATLANTIS II deep submersible science in 1989 and beyond. The workshop was held on December 7, 1986, just preceding the Fall AGU/ASLO meeting, in San Francisco, California.

Over the past several years the ALVIN Review Committee, Robert Corell, Chairman, has, each winter, conducted workshops to develop information for the advanced planning of the oceanographic research program supported by ALVIN/ATLANTIS II. The workshops have focused on solicited statements of interest or intent to use ALVIN two or more years into the future. These statements of interest and their presentation by prospective investigators have provided much of the basis for the ARC's advanced planning.

Introduction: Robert Corell called the workshop to order at 8:45 a.m. He provided a brief agenda:

Introduction and welcome - Robert Corell
ALVIN/ATLANTIS II operations in 1986 - Barrie Walden
Commands on long range programs - Agency representatives
SEA CLIFF, program status - Keith Kaulum
Presentations - Prospective Investigators
Summary - Robert Corell

The remaining ALVIN Review Committee members, UNOLS staff and funding agency representatives were introduced:

ALVIN Review Committee

Kirk Cochran
Jody Deming
Jim Eckman
George Grice
Don Karig
Geoff Thompson
George Weatherly

Agency Representatives

Keith Kaulum, ONR
John McMillan, NSF
Elliot Finkle, NOAA
Mike De luca, NOAA

UNOLS

Bill Barbee

ALVIN operations in 1986: Barrie Walden, Submersible Program Manager, W.H.O.I., reviewed the 1986 ALVIN operating season together with the renovation/overhaul completed in mid year. The overhaul was a success, even though some procurement and equipment development problems delayed completion. By the time the overhaul, certification and test dives were complete, the start of operational work had been delayed by about one month. **Renovation and overhaul have resulted in a virtually new ALVIN.** There have been no serious problems with the new thruster motors, thus, there is no longer serious concern with schedules that include numerous deep dives. Maneuverability, bottom time and range have all been increased (as reported earlier).

There have been data acquisition system problems. Data acquisition capabilities have not been as good as prior to overhaul. Specific problems have been cited with 35mm camera and video systems. These problems are being addressed by adding a data section to the ALVIN Group; one man will be responsible on every cruise to monitor and assure performance of data systems.

Exchange between ALVIN users and operators concerning operational problems including those with data systems has been prompt, open and effective. There is good awareness of what problems exist; but solutions are sometimes constrained by limited manpower and money. **Although the ALVIN Group is much more capable of supporting research diving than it was a few years ago, the extent and scope of the ALVIN/ATLANTIS II operations have expanded at least as fast.** The responsibilities of supporting the expanded program are seriously stretching the ALVIN Group.

After research projects were undertaken on May 16, 1986, operations follow the schedule (Appendix II) very closely. Ten research cruises with 109 days on station were completed with no significant loss of dive time to weather, equipment or logistics. First projects were in the north Atlantic, followed by two cruises in the Gulf of Mexico, one in Panama Basin and the last of the year off California.

Agency outlook: John McMillan, NSF, reported that the three-agency agreement among NOAA, NSF and ONR had been signed for the fourth time, to cover October, 1986 through October, 1989. Support of ALVIN deep submergence research is in NSF's long range plans for the foreseeable future. ALVIN is viewed as an important program albeit expensive. NSF was funded in accordance with its budget request for 1987. Ocean Sciences Division's allocation is protected. OCE's emphasis beginning in 1987 will be in Global Geosciences. The ALVIN program will be competitive for Global Geosciences funds, especially within Ridge Crest

Studies. In summary, the realistic outlook is that 1987 funding for ALVIN, along with other strong ocean sciences programs, will be about level with 1984.

The ALVIN community was alerted to **interest under the U.S.-France bilateral agreement for cooperation in oceanography in developing and conducting a high visibility project in oceanography.** A leading candidate project is a multi-disciplinary study on ocean ridge systems. The study would include investigations on the mid Atlantic Ridge using ALVIN and the French submersible NAUTILE. **Donald F. Heinrichs, NSF is the U.S. Chairman of the planning group for the project.** In a letter to the Workshop (Appendix III) Dr. Heinrichs emphasized that: no plan exists at this time, the working group will identify the scientific framework for a project, comprehensive science planning will come at a later stage, and the ALVIN Review Committee will be involved in developing the long range plan. Field investigations involving ALVIN could begin in 1989 at the earliest. The details of how the U.S. portion of the science program would be developed have not been established; science proposals would likely undergo regular agency reviews.

Keith Kaulum reported that ONR had received no increases for ocean research in 1987, so that their support to ALVIN should remain about level. He noted that ALVIN is the only block funded facility program in ONR.

Elliott Finkle reported that NOAA will spend about $5 million on submersible research and facilities in 1987. Their program includes continued support for ALVIN, other submersible facilities in support of specific projects and regional submersible facilities centers. Program emphasis will shift from facilities support toward science support.

NOAA's Undersea Research Program has obtained the PISCES V (6,200 ft. depth capability) for use by the science community through the University of Hawaii. They will also employ (on a project-specific basis) PISCES VI (6,200-8,000 ft.) off Bermuda and PISCES IV (5,600 ft.) on Gorda-Juan de Fuca.

NOAA is examining acquisition of a 6,600 meter capability submersible with support ship in about 1990.

Robert Corell announced distribution of the report ALVIN '86, A Report on the Program's Status in June, 1986. Among ALVIN '86 recommendations is one to make a major submersible science study. The recommendation was accepted by UNOLS, and a study (S3 revisited) will be initiated early in 1987. Bruce Robison, University of California, Santa Barbara, will chair the study.

Presentations by Prospective Investigators: Robert Corell outlined the ALVIN Review Committee's expectations for presentation of Notices of Intent:

- an outline of central science issues,
- a description of pre-dive investigations and information,
- the area and location of dives,
- dates proposed,
- plans for funding, and,
- questions from ARC members.

There were pending before the ARC, **seventeen notices of intent for a total of over 350 dives.** These earlier notices are summarized in Appendix IV and included in the tabulation below.

In 1986, thirteen Notice of Intent to use ALVIN for a total of 259 dives were received, nine were presented. Notices in 1986 are summarized in Appendix V and tabulated below.

ALVIN Review Committee
Areas of Research Interest
(From Notices Submitted Dec. 1983-Dec. 1986)

* Notices Submitted 1983-1985

Summary Number	Investigator	Number of Dives	Discipline
	North Atlantic		
21.*	Flood	12	Geological
23.*	Flood	30	Phys/geol
6.*	Hollister	20	Geological
1.	Levin	20	Biological
3.	Jannasch	4	Bio/Chem
4.	Rona	20	Geo/Geochem
13.	Shor	10	Bio/Geo
North Atlantic Subtotal		7/116	
	Gulf of Mexico		
12*	Hecker	18	Biological
14*	Lutz	2	Biological
Gulf of Mexico Subtotal		2/20	

South Atlantic

22.*	Flood	15	Geo/Bio
South Atlantic Subtotal		1/15	

Eastern Pacific
Juan de Fuca, Gorda, etc.

7.*	Abbot	21	Geo/Geochem
17.*	Kappel	15	G & G
18.*	Cacchione	33	G & G
20.*	Smith, C.	18	Biological
10.	Kulm	25	G & G
12	Morton	20	Geo/Geochem
Eastern Pacific Subtotal		6/132	

Guaymas

16.*	Grassle	19	Bio/Chem
Guaymas Subtotal:		1/19	

Panama Basin, EPR, Galapagos, S. America

1.*	Batiza	6	G & G
5.*	Craig	60	Geo/Geochem
9.*	Batiza	20	G & G
2.	Lonsdale	15	G & G
5.	Hessler	25	Bio/Chem
6.	Sinton	20	G & G
8.	Craig	(20)**	Geophys/Geochem
9.	Kulm	25	G & G
Panama Basin, EPR, Galapagos, S. America Subtotal		8/171	** dives included in 60 for 5* above

Western Pacific
Southwest Pacific

2.*	Taylor	35	Geophys/Geochem
4.*	McMurtry	20	Geo/Geochem
7.	Taylor	45	Geophys/Geochem
Southwest Pacific Subtotal		3/100	

Northwest Pacific

47.*	Karig	10	G & G
Northwest Pacific Subtotal		1/10	

TOTAL **29/583**

Summary by Discipline
(multi-disciplinary studies included in each discipline mentioned.)

G & G	457
Chemistry	269
Biology	131
Physics	30

Summary of Interest: Although there were fewer Notice of Intent submitted and presented at the 1986 Workshop than at any earlier one, virtually every new Notice was for a multi-faceted investigation involving many investigators and institutions in a corporate approach. Numbers of prospective investigations and ALVIN dives remain high, and would project continued over-subscription of ALVIN. Other inferences:

- Already strong interest for investigations in the North Atlantic, including mid-Atlantic Ridge. (More interest is anticipated relative to U.S.-French joint interest.)

- Interest remains high in the northeast Pacific (Gorda-Juan de Fuca and continental margin) and in the equatorial Pacific (Guaymas, Panama Basin, EPR, and South American margin). More than half of all Notices are for work in these two regions.

Status of SEA CLIFF: Keith Kaulum reviewed recent SEA CLIFF operations and program outlook. During 1986 the SEA CLIFF supported operations on the Gorda Ridge under a Minerals Management Service program conducted by USGS scientists. Although the program had some success (eight dives in 1 1/2 months), operations were clearly constrained by limitations of the support ship TRANSQUEST.

The Navy has FY-1987 funds for support ship acquisition. A contract would be awarded February, 1987, and Navy operations would begin in October, 1987. The support ship would be able to launch submersibles in sea state 3 and recover in sea state 4, using a deep ocean lift system. The ship would have an adequate DSV hanger, dynamic positioning, SEA BEAM, short and long baseline navigation, GPS and deck vans. It would have a 6,000 mile range at 12 knots, accommodations for 40 scientists and space for vans.

Meanwhile, TURTLE should be available in March, 1987. SEA CLIFF will be in overhaul March-October, 1987. **Tentatively, academic science operations are projected for January, 1988.**

Some management issues remain, notably that of **user fees.** A user fee is contemplated, to provide instrumentation, development and technical support. Projects supported by federal agencies and their contractors could use the Navy DSVs at the user fee rate; private and non-profit groups would pay full costs.

The workshop was adjourned at 3:45 p.m.

ALVIN Review Committee
Review Meeting
December 8, 1986

The ALVIN Review Committee met on December 8, 1986 with a limited agenda: to consider a small number of extraordinary or supplemental dive requests for 1987, to revise their 1987 schedule recommendations to accommodate sponsoring agency funding and to discuss advanced planning for ALVIN.

Attendees:

ALVIN Review Committee	**Sponsoring Agency Representatives**
Robert Corell, Chairman	Keith Kaulum, ONR
Kirk Cochran	Elliott Finkle, NOAA
Jody Deming	John McMillan, NSF
Jim Eckman	Mike Ledbetter, NSF
Dan Karig	
Geoff Thompson	
George Weatherly	
George Grice, *ex-officio*	

Adjustment of 1987 Schedule: ALVIN Review Committee members were alerted by representatives of the three sponsoring agencies (NSF, NOAA and ONR) that the 1987 schedule developed in June, 1986 (see ARC minutes for May, 1986 meeting) needed adjustment. The reasons:

- Almost all dives on that schedule were sponsored by NSF, resulting in funding support beyond agency means.

- The schedule included some work for which science projects were not funded.

- The schedule included no NOAA sponsored work and only a few ONR-sponsored days/dives.

The need for the Committee to review their recommendations for the 1987 schedule was reinforced by receipt of a number of additional requests for ALVIN dives, either supplemental to projects already scheduled or logistically opportunistic.

These additional ALVIN time requests are summarized in Appendix VI. In reviewing the additional requests the Committee took into consideration science funding information furnished by agency representatives, NSF's announced need to reduce the number of days/dives they supported, NOAA and ONR desires to increase their levels of supported work in 1987. **The integrated effect of new ARC schedule recommendations are shown on the revised schedule (Appendix VII).**

The ARC briefly discussed issues connected with U.S.-France Bilateral interest in involving ALVIN in about 1989-1990. The Committee urged that a Chairman's letter to Don Heinrichs, NSF and to NOAA express ARC interest in being involved in planning for any ALVIN commitment.

The Chairman discussed with ARC members candidates for a working group to address the 1987 Submersible science study. Informally, the ARC urged that the group include representative users in geochemistry, geology and geophysics, and biology. Additional members should be able to speak to technological development/engineering, to the state-of-the-art for submersibles and to broad trends in national ocean programs.

The meeting adjourned at 5:05 p.m.

Appendix I

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of institutions
for the coordination and support
of university oceanographic facilities

October 23, 1986

Dear Colleague:

This letter, together with attached announcement and form to note interest, is to advise you of a UNOLS workshop to generate planning information for ALVIN-ATLANTIS II deep submersible science. The workshop will be held December 7, 1986, in San Francisco, California, just preceding the AGU Fall/ASLO Winter Meeting. The workshop conducted by the ALVIN Review Committee is to consider and hear presentations on interest in or intent to use ALVIN-ATLANTIS II for submersible science during 1989 and beyond.

BACKGROUND: Over the last several years it has become apparent that the task of matching time on the seagoing ships and platforms operated by UNOLS institutions with requests for the use of those facilities by skilled individual investigators is becoming critical with respect to the Alvin Deep Submergence Vehicle, operated as a National Oceanographic Facility in UNOLS. The ALVIN generates many more requests for dive time than can be accommodated. With the advent of ATLANTIS II as a support ship for ALVIN, operations can be considered throughout the world's oceans. Interest and requests for ALVIN dives are for diverse operations and widespread areas.

The ALVIN Review Committee (ARC), Robert W. Corell, Chairman is charged with advanced planning, review of dive requests, and making recommendations for schedules and operations for ALVIN. Over the past few years the ARC has solicited statements of interest or intent to use ALVIN two, three and more years into the future, and has organized workshops for the presentation of that interest. (The first ALVIN-ATLANTIS II Workshop, in December, 1982, garnered planning information for 1984 and 1985, and will affect ALVIN-ATLANTIS II operations into the 1987 operating season.)

The ALVIN Review Committee announces and will host a workshop to generate planning information. The workshop (see and distribute to your co-workers the attached announcement) will be held:

December 7, 1986
8:30 a.m. - 5:00 p.m.
Japanese Pavilion
Cathedral Hill Hotel
San Francisco, California

This Workshop will emphasize planning information for 1989 and beyond. The information considered will be Notifications of Intent or interest in ALVIN Submersible Science. Plans for 1989 and beyond are completely open. An ALVIN overhaul is anticipated in late 1988. (A tentative schedule has already been devised for 1987 and operating areas have been indicated for 1988; see below.)

It is requested that notifications submitted by individual investigators provide the information indicated on the attached.

ALVIN Submersible Science Planning
Notification of Intent

At the Workshop, brief presentations are invited from individuals in attendance, within the time available. Written Notifications of Intent will receive equal consideration in the ARC's planning.

Prospective investigators should be aware that these Notifications of Intent are considered by the ARC for planning purposes only. No ALVIN dives will be recommended on the basis of these Notices (although areas of operation or topical research investigations may be recommended by the ARC). Rather the ARC recommends ALVIN-supported investigations for the following year on the basis of ALVIN Dive Request (submitted in response to appropriate announcements) reviewed at their annual May meeting. Furthermore, prospective investigators are advised that they must seek funding in a timely fashion for their ALVIN-supported investigations--including payment for ALVIN and ATLANTIS II time--from their traditional funding sources, most often NSF, ONR and NOAA. Note that NSF is reluctant to fund field investigations that require support from ALVIN-ATLANTIS II or other sea-going facilities unless proposals are submitted in time for review panels in the summer prior to the year of intended operation.

STATUS OF THE ALVIN PROGRAM: The ALVIN/ATLANTIS II should, by December 7 be enroute to San Diego, with one project remaining for completion during 1986.

During the first half of 1986, a major overhaul was completed on ALVIN. The overhaul was successful, in that all major objectives were met: greater maneuverability, more speed, greater payload and/or increased bottom time. Improved operational dependability is anticipated, and data logging systems have been replaced with easier-to-maintain, more capable versions.

The ALVIN/ATLANTIS II took up operations in June. Operations have followed closely the schedule published earlier (ALVIN Review Committee meeting report for June 1986), with work in the northwest Atlantic, Gulf of Mexico, Panama Basin and off the California coast.

A tentative schedule has been published for 1987. The ALVIN/ATLANTIS II would take up work in California Basins, then begin transit westward across the Pacific with investigations near Hawaii and in the central Pacific enroute. The period April through August would be devoted to

investigations in the Mariana region and in the Bonin Island Arc. ALVIN/ATLANTIS II would then return to the eastern Pacific for one project off the Oregon coast and end the operations year with a series of investigations off California.

A schedule has not been developed for 1988. However, ARC recommendations for eight projects totaling more than 120 dives are pending. All of the pending work is in the eastern Pacific, from Gorda-Juan de Fuca to the East Pacific Rise. Further, W.H.O.I. operators advise that ALVIN/ATLANTIS II overhaul and maintenance periods must be scheduled in late 1988. Thus the most likely schedule would be confined almost entirely to the eastern Pacific, and would include a substantial period on Gorda-Juan de Fuca, additional work off California, Mexico and the EPR and, perhaps, work in the Atlantic convenient to a Panama-Woods Hole transit. The 1988 schedule will be developed in late spring 1987, based on pending recommendations together with new ones arising from the 1987 ARC review.

NOTICE OF INTENT TO USE ALVIN: Individual investigators who intend to use ALVIN for deep submergence research during 1989 and beyond are invited to inform the ARC by providing the information requested on the attached form for:

ALVIN Submersible Science Planning
Notification of Intent

There is no firm deadline for submitting these forms, but to be most useful to the ARC those related to the workshop in San Francisco on December 7 should be received by November 21.

Notices of Intent will be considered for any ocean area in 1989 and beyond.

Investigators who requested 1987-88 ALVIN time early in 1986 or who intend to submit requests in early 1987 for dives in 1988 need not submit Notices of Intent for that same work. The purpose of these workshops is to plan for 1989 and beyond.

Sincerely,

for Robert W. Corell, Chairman
ALVIN Review Committee

ANNOUNCEMENT

The

ALVIN REVIEW COMMITTEE

Will Hold an OPEN WORKSHOP

to generate Planning Information on

ALVIN-ATLANTIS II

DEEP SUBMERSIBLE SCIENCE

PROPOSED FOR 1989 and beyond

TIME: SUNDAY, DECEMBER 7, 1986
8:30 a.m. - 5:00 p.m.

PLACE: JAPANESE PAVILION

CATHEDRAL HILL HOTEL

SAN FRANCISCO, CALIFORNIA

Everyone with an interest in the ALVIN program is welcome. The ARC invites concise presentations from investigators who have submitted proposals or letters of intent for the use of ALVIN-ATLANTIS II during 1989 and beyond. For further information contact:

William D. Barbee
UNOLS Office, WB-15
School of Oceanography
University of Washington
Seattle, WA 98195
(Telephone: 206-543-2203)

ALVIN Submersible Science Planning
Notification of Intent

Submit to: Chairman, ARC
UNOLS Office, WB-15
School of Oceanography
University of Washington
Seattle, WA 98195

Principal Investigator:

Name:
Title:
Address:
Telephone Number:

Institution:
Names of Other Co-Investigators:

Principal Program Objectives: (Use additional sheets as necessary):

Areas of Proposed Operations:

Expected Years of Operations (for multi-year proposals):

Anticipated Foreign clearances: (For work within 200 nm of coastal states)

Names and Affiliations of Foreign Collaborators (if any):

Approximate Dates of Proposed Work (Season, year):

Suitable Alternate Dates (Season, year):

Number of Dives Anticipated (by cruise for multi-cruise projects):

Anticipated Size of Scientific Party:

Special Facilities Needs (including SEABEAM on ATLANTIS II):

Special Constraints (time, radio isotope clean ship, etc.):

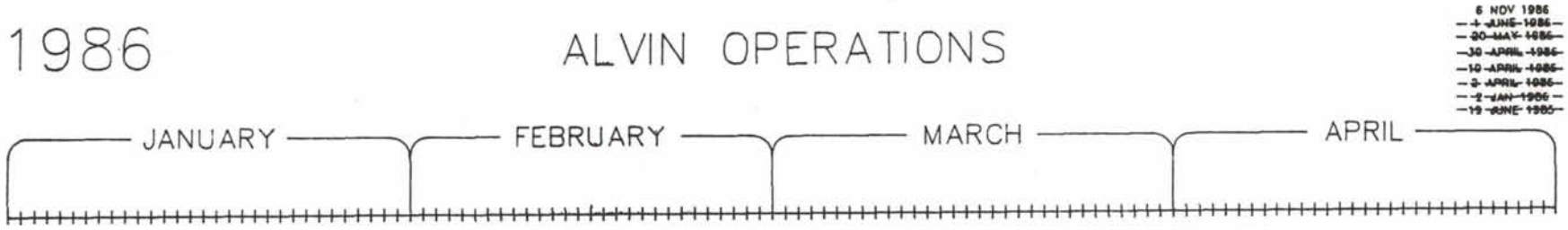
Proposed Funding Sources:

Do you intend to participate in the December 1986 Workshop? Yes or No

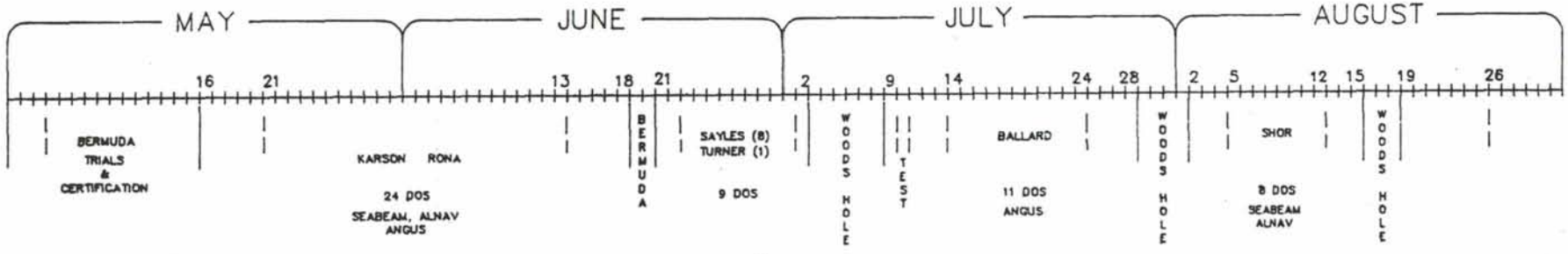
Signature: Date:

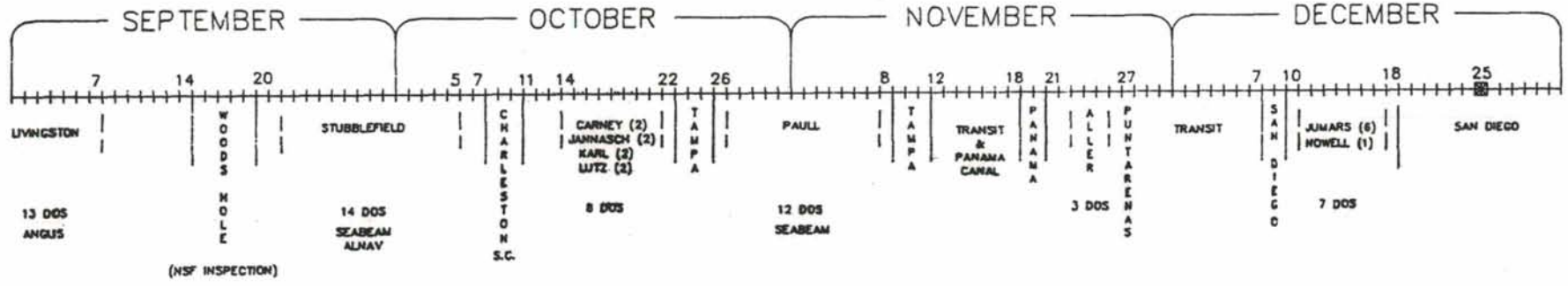
1986 ALVIN OPERATIONS

6 NOV 1986
~~1 JUNE 1986~~
~~30 MAY 1986~~
~~30 APRIL 1986~~
~~10 APRIL 1986~~
~~3 APRIL 1986~~
~~2 JAN 1986~~
~~19 JUNE 1985~~



WOODS HOLE--OVERHAUL





Appendix III

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

M E M O R A N D U M

5 December 1986

FROM: Donald F. Heinrichs, U.S. Chairman

SUBJECT: U. S. - France Ridge Crest Processes Studies

TO: ALVIN Submersible Science Planning Workshop

Background

The U.S.-France bilateral agreement for Cooperation in Oceanography was signed in 1970. The lead agencies for the agreement are NOAA and IFREMER. At present, ten main areas of cooperation are identified which range from Marine Geology and Geophysics to Marine Pollution Control. As a result of the multiple topics, most of the joint efforts under the agreement in recent years have been dispersed, relatively small projects with little external visibility.

Marine Geology and Geophysics is one of the most active topic areas for cooperation. The FAMOUS project in the mid-1970s which used submersibles from both countries was an early high-visibility project. This was followed by a series of smaller projects, scientists exchanges, etc. on ocean ridge systems centered around ALVIN and CYANA submersible operations. These projects included NOAA and USGS scientists plus NSF and ONR-sponsored university researchers.

Both the U.S. and French lead agencies believe the cooperative agreement needs to focus on fewer, high-priority, integrated research programs. The agreement is not intended to cover all research projects involving U.S. and French scientists. Many projects are between individual scientists or agencies and do not require formal coordination. A limited number of research areas where formal cooperation will benefit both countries are being discussed--i.e., the ten areas of cooperation will probably be reduced to seven this year. Marine Geology and Geophysics will change to Marine Geosciences and incorporate chemical/geochemical studies.

As part of this effort the concept of a "lead topic" or project was developed. A Multidisciplinary Joint Project on ocean ridge systems was recommended as the first candidate effort. Both France and the U.S. have high scientific interest, active research groups, major capital facilities, long range plans directed at the topic, and ongoing programs which are not integrated.

Status

Attachment 1 is a general description of the proposed project and the charge to a working group under the U.S.-France bilateral for an "action plan." Several important points need to be made at this time:

- No plan exists at this time.
- The working group will identify the scientific framework for a potential joint U.S.-France submersible program.
- Comprehensive science planning, facilities requirements, and timing will be done in subsequent stages.
- The ALVIN Review Committee and U.S.-French scientific community will be consulted/involved in developing the long range plan.

Donald F. Heinrichs

Attachment

OCFS/DFHenrichs/vb/12/05/86/77837
chron
reading file
File copy

Attachment 1

MULTIDISCIPLINARY JOINT PROJECT

A multidisciplinary joint research project that incorporates the scientific interests of both sides will be planned. Such a project will bring focus and visability to the bilateral cooperation, and will address scientific questions that can be answered within the next 2-5 years, making use of appropriate oceanographic facilities. A joint project will be designed as a contribution to an understanding of the geological, chemical and biological processes at fast and slow spreading ridges, and the consequences of these processes on the oceans. Initial consideration leads to a project consisting of joint actions at sea on sites of the mid-Atlantic ridge. Activities would be designed to explore the frontier scientific area of deep sea hydrothermal vents on the mid ocean ridge system by investigating the processes governing the formation of unusual biological communities and mineral deposits found at active vent sites, and evaluating the global effects of venting processes on the chemical balance and circulation of the ocean.

A small working group of key individuals will be formed and tasked with a development of an action plan to address the steps necessary to implement such a joint project. Appropriate individuals include:

Don Heinrichs, NSF, co-chairman
Gary Hill, USGS
Steve Hammond, NOAA
Joseph Kravitz, NAVY
Polly Penhale, NSF
Elliott Finkle, NOAA (ex-officio)

Bernard Biju-Duval, IFREMER, co-chairman
Daniel Desbruyeres, IFREMER
Henri Bougault, IFREMER
Thierry Juteau, UBO

The initial stage of project formulation will be identification of the scientific questions and the development of working hypotheses. The working group will draw upon other individuals as necessary. Subsequent stages will involve (1) identifying the requisite facilities and (2) planning the actual joint project. Composition of the working group may change to accommodate the needs in later stages. The working group will report to the two chief scientists for the bilateral (R. Lawrence Swanson and Eric Isphording), who will be responsible for the program development plan.

The working group is be tasked with the preparation of a preliminary action plan by March 1, 1987. This will enable Anthony J. Calio and Yves Sillard to discuss the joint project when Calio is in Paris for the IOC Assembly.

ALVIN/ATLANTIS
Notification of Intent Summary
Submitted 1983-1985

December, 1986
San Francisco, CA

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	No. Dives	Remarks
1. Batiza, R.	Simkin, T. Fornari, D. Smith, T. Allen, J. Koppel, E.	12-43N, 102-35W (Volcano 6)	Mapping of hydroclastite deposit to test hypothesis for formation	?	Not Specified	—	6	
2. Taylor, Brian	Sinton, J Craig, H. Perfit, M.	Western Pac. 1. E. Woodlark Basin 2. W. Woodlark Basin 3. Manus Basin	Investigations of ridge subduction volcanism associated with continental rifting and fast back-arc spreading	NSF AID Australia	1988/89	--	1. 5 2. 10 3. 20	Relates to 86/1., Taylor, Manus Basin
*4. McMurtry, G.	Karl, D. Kroenke, L. Malahof, A. Sinton, J.	North Fiji Basin, (South Pordota Ridge, NFB central spreading Center, Figi Fracture Zone)	Investigation of hydrothermal systems in North Fiji Basin	NSF USAID	Winter 1988/89	Fall-Spring 1988-1989	20	
5. Craig, H.	Hey, R. MacDougall, D. Ballard, R. Fox, J. MacDonald, K.	East Pac. Rise 13S-35S	Investigation of EPR: hydrothermal vents, tectonics, petrology and geomorphology between Garrett and Chile Fracture zones	NSF	January-March 1988	December 1987	60 (3 legs)	Craig portion on 86 summary
*7. Abbott, D.	Lyle, M. Simoneit, B. Kadko, D. Collier, R.	Souther Gorda Ridge (Escanaba Trough)	Characterize on a 1-200m. scale heat loss, sediment alteration, water column chemistry and density structure of sedimented active vents	NSF	Summer, 1988	—	21	
*9. Batiza, R. Longmuir, C. Bender, J.	Kappel, E. Fornari, D. Allan, J.	EPR, 8-30N to 12-30N	Observations and samples for petrologic and tectonic investigation of DevAl's on EPR	Not Specified	1987	?	20	Presented by Bender, 1/12/86
12. Hecker, B.	Grassle, J.F. Grassle, J.P. Lutz, R. Turner, R. Wishner, K.	West Fla. Escarpment seeps 26N, 85W	Structure and dynamics of deep-sea communities at West Florida Escarpment seep side	NSF	Spring, Summer 1988	any good weather	18	Presented by F. Grassle, 1/12/86; Request submitted 5/86; Tabled

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	No. Dives	Remarks
14. Lutz, R.	Hecker et al	West Fla. Escarpment Seeps 26N, 85W	Molluscan studies. Deploy arrays for long term incubation and recovery in 88 et seq. (See #12, Hecker).	NSF	1986 1988	good weather	2-86 ?-88	Presented by F. Grassle, 1/12/86 Request submitted 5/86; Tabled
16. Grassle, J.F.	Gagosian, Lutz Sayles, Martens Jannasch, Manrique Karl, Molina-Cruz Soto-Gonzalez Romero-Jarero	Guaymas Basin	Biology and chemistry of Guaymas hydrothermal vents	NSF	Spring 1988	Late Fall 1988	19 dives 21 days	Part recommended 5/86; other to be resubmitted
17. Kappel, E.	Ryan, W.B.F. Langmuir, C. Christie, D. Franklin, J.	Explorer and Endeavor Ridges 49 to 50N, 47-50 to 48N NE Pacific	Vulcanism, tectonics, petrology, structure, stratigraphy, gravity on mid-ocean spreading center.	NSF and EMR, Canada	Spring or Fall 1988 or beyond		15	Presented by W.B.F. Ryan, 1/12/86
18a. Cacchione, D. 18b. 18c.	Hampton, M. Gardner, D. Field, M. Drake, D. Edwards, B. McCulloch, D. Karl, H.	Western EEZ, at a. 40-30N, 125W b. 46N, 126W and c. 37N, 126W	Geological research and mapping in Western U.S. EEZ (At Gorda Escarpment and Fan, Astoria Fan and Cascadia Channel and Tanney Seamount	USGS	1987	1988 or 1989	a.15 b.10 c. 8	
20. Smith, C.	Jumars, P.	Continental borderlands off S. Calif. (esp. Santa Catalina Bas.)	Megafounal bioturbation and infaunal succession at the deep sea floor.	NSF	Summer & Fall, 88 or 89	Spring or Winter, 88 or 89	3 cru 6 @	Timing similar to Jumars et al in 86/87
21. Flood, R.	Shor, A.	Hudson Channel/ Upper cont. rise to 4000 m.	Study recent sedimentary processes on the Hudson Rise Channel. Precise sampling of channel floor and wall.	NSF	Summer, 1988	Spring 1988	12	Use SEA BEAM, gravity and piston corers
22. Flood, R.	Hecker, B. Shor, A.	Amazon Fan off NE Brazil	Study of surficial sediments and organisms in submarine fan channels and the canyon of the deep sea fan	NSF	1988		15	Brazilian clearance. Dr. M. Gorini, Collab.

ALVIN/ATLANTIS II
Notification of Intent Summary

Investigator	Associates	Area	Purpose	Sponsor	Date	Alternate	No. Dives	Remarks
23. Flood, R.		Blake Outer Ridge, eastern U.S. margin	Deploy, recover and follow up long-term (1 yr.) experiments on bottom current effects on bed forms and bed form dynamics.	NSF	June '88 June '89 June '90	Spring, Summer	10 per year	SEA BEAM, gravity coring
			Notices Pending From 1983, 1984					
6. Hollister, C.	Flood, R.	Rockall Basin, NE Atlantic	Sediment dynamics of Rockall trough	NSF or ONR	Midsummer 1988		20	
47. Karig, D.	Hussong, D.	Tincor Transect	Geophysical study of: role diapers slumps, etc., deformation, water egress, age control	NSF	After 1986		10	

Summary: **354 dives**

* Presented at San Francisco, 12/8/85
2., 4. Presented by McMurtry 12/8/85
9. Presented by Bender, 12/8/85
8. Presented by Kulm, 12/8/85
10. Presented by Rona, 12/8/85
3b. Presented by Morton, 12/8/85
7. Presented by Abbott, 12/8/85.
3a. Noted on 12/8/85
** Presented at New Orleans, 1/12/86
12. Presented by F. Grassle, 1/12/86
14. Presented by F. Grassle, 1/12/86
17. Presented by W. F. B. Ryan, 1/12/86

ALVIN/ATLANTIS II
Notification of Intent Summary

San Francisco, CA
December 7, 1986

Investigator	Associates	Area	Purpose	Sponsor	Date	Altern.	No. Dives	Remarks
1. Levin, Lisa A.	DeMaster, D Eckman, J.	39N, 70W, NW Atlantic Slope	Examine role of agglutinating protozoons in organization of deep sea benthic communities; influence on near bottom particle dynamics.	NSF-2	Fall, 88 Spring, 89 Early, 91	?	6-88 8-89 6-91	Three phase investigation
2. Lonsdale, P.	Christie, D. Francheteau, J.	1N, 102W, EPR	Geologic study and sampling of boundaries of Galapagos Microplate.	NSF-1 (1/87)	Mid 88	Mid 89 or avail.	15	If not funded for 88 ops, will resubmit for 89 or later.
3. Jannasch, H.W.		23N, & 26N Mid-Atlantic Ridge	Microbiological studies hydrothermal vents; chemosynthetic food source of shrimp population.	NSF-1	Open-1989	Open	4	
4. Rona, Peter A.	Thompson, G. Edmond, J.	12-26N Mid Atlantic	Investigation of hydrothermal processes at Mid Atlantic Ridge includ. black smokers at TAG.	NOAA/ NSF-1	Apr-Jul 1988	1989, post overhaul	20	Reiterates 1985 Notice Presented 12/86
5. Hessler, R.R.	Childress, J. Johnson, K. Somero, G. Felbeck, H. Vetter, R.	Galapagos Hydrothermal vents	Study temporal & spatial changes in hydrothermal vent faunas; study physiological & biochemical properties of vent organisms. Cruise essential for follow up temporal studies on 1988 visit.	NSF	Early 1990	Part. Negot.	20-25	Presented 12/86
6. Sinton, John M.	Hey, R. Batiza, R. Johnson, H. MacDonald K.	2-15N-2-45N, 95-25W-96W EPR	Structural, petrologic & magnetic mapping of failing rifts; structural, hydrothermal and petrologic characterization of normal (doomed) rift; study pseudofault volacanism hydrothermal activity & exposed dike complex.	NSF-1	Late 1988	Early or late 1989	20	Reiterates 1985 Notice Presented 12/86
7. Taylor, Brian	Sinton, J Craig, H. Hessler, R.	3-4S, 149-151E	Structural & petrologic characterization of back arc and Extensional Transform Zone; geochemic & biological studies of W. Pacific hydrothermal systems.	NSF-1	Late 1989	Open '90	45	Relates to 1985 Notice 2. Presented 12/86
8. Craig, Harmon	Hey, R. Ballard R. Fox, P.J. MacDonald, K. MacDougall, J.D.	26S - 32S, EPR	Study hydrothermal vents, petrology, geochemistry & tectonics from Easter Microplate to Jaun Fernandez Microplate.	NSF-2	Jan., 1988	Feb., 88	20	Part of Notice submitted 1984, 1985. (Other parts-40 dives still pending.) Presented 12/86

Sponsor Code
1. Proposal to be submitted
2. Proposal submitted
3. Funded

Investigator	Associates	Area	Purpose	Sponsor	Date	Altern.	No. Dives	Remarks
9. Kulm, Lavern D.	Suess, E. and others	Central Peru Slope, 11-12S and 9-10S	Investigation of tectonic processes and fluid venting in forearc basin.	NSF	1989 and beyond	-	25 (10 at 11-12S, 25 at 9-10S)	Replaces Notice 8 made Dec., 1985
10. Kulm, Lavern D.	Carson, B. Suess, E. Lewis, B. Moore, C.	Central Oregon Continental Slope	Monitor fluid venting processes on Oregon Continental margin.	NSF	1990 (continuing)	-	25	Extension of investigations approved 87/88.
11. Grassle, J.F.	Whitlatch, R. Aller, R. Honjo, S.	Panama Basin	Animal-sediment relationships and sediment geochemistry in a low energy environment.	NSF	1989		10	Large scientific party. Follows earlier work presented 12/86.
12. Morton, Janet Edmond, John	USGS Scientists	Gorda, Escanaba Trough	Geology & Geochemistry in large depositional environment.	USGS NSF	1988 and beyond		20/yr	Interest in follow on to proposed for 1988. Presented 12/86
13. Shor, Alexander	Piper, D.J.W. Vandover, C. Others	Laurentian Fan (North Atlantic)	Biological and geological studies of 1929 Grand Banks turbidite area.	NSF	1988 or 1989		about 10	Presented 12/86. Builds on 1986 work.

SUMMARY: **259 dives**

SUMMARY
ALVIN SHIPTIME REQUEST

Dec. 1986
San Francisco, CA

Investigator	Associates	Area	Purpose	Sponsor	Date	Altern	No. Dives	Remarks
8. Taylor, B.	Fryer, P.	Bonin Island Arc, 40N, 140E	Investigate rifting processes in the Bonin Island Arc.	NSF	1987		8	Conditionally recommended May, 1986. **Not recommended**
9. Hammond, S.	Curl, H. Embley, R. Morton, J. Normork, W.	S. Central Juan de Fuca Ridge	NOAA/PMEL Vents Program investigations of Axial Seamount and Southern Juan de Fuca sites	NOAA	June-Aug 1987		20	Recommended June, 1986. **Recommended for scheduling in 1987.**
10. Kulm, L. et al		Central Oregon	Subduction processes in heavily sedimented trench.	NSF	Summer 1987		25	Recommended June, 1985. **Recommended 12 in 1987, 13 in 1988.**

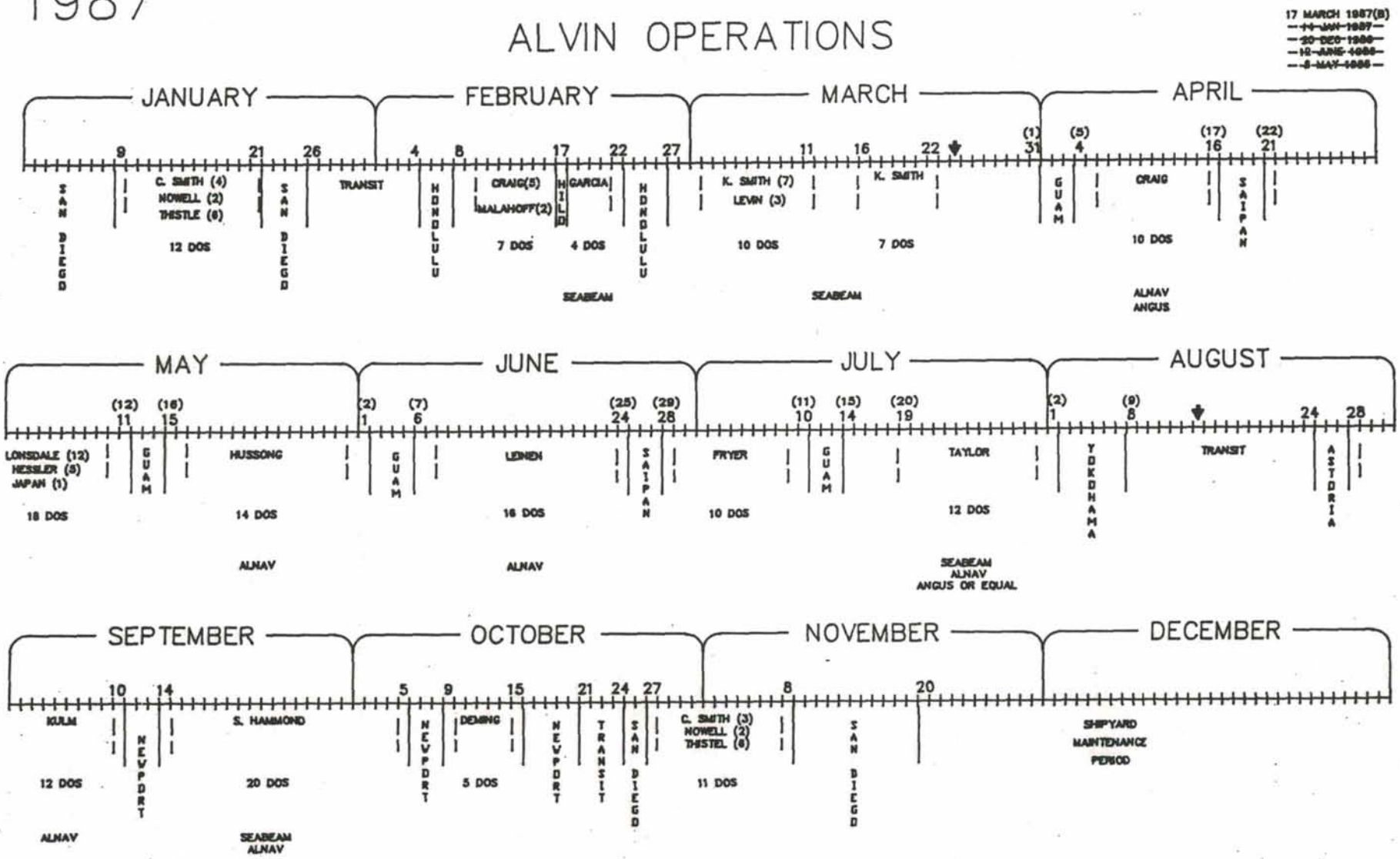
SUMMARY
ALVIN SHIPTIME REQUEST

Dec. 1986
San Francisco, CA

Investigator	Associates	Area	Purpose	Sponsor	Date	Altern	No. Dives	Remarks
1. Leinen, M.	McDuff, R. Delaney, J. Becker, K	Mariana Trough 18N, 144-18E	Evaluation of stratigraphy and horizontal structure controls on volcanic rocks--investigation of off axis hydrothermal vent field.	NSF	May 1987	N/A	2 (add'l)	Add'l to 16 already recommended, (total 18) **Add'l dives not recommended.**
2. Fryer, P.	Gill, J.	Mariana Arc 21-35N, 143-40E	Arc volcanism; submarine volcanoes in the Mariana Arc.	NSF	June 1987	N/A	2 (add'l)	(Orig. request was for 10 dives; only 8 scheduled. Request for 10 total) **Recommend 10 dives.**
3. Malahoff, A	Embley, R. Hammond, S McMurtry, G. Karl, D. Grigg, R.	Loihi Volcano	Geology, geochemistry and microbiology of rifts and hydrothermal vents.	NOAA	Spring 1987	-	12	When ALVIN gets to Hawaii. **Recommend 2 dives.**
4. Purdy, G.M.	Little, S.A.	Mariana Trough 18-12N, 144-42E	Measurements of hydrothermally generated sound; direct measurements of velocity, temperature and chimney-geometry dependent hydrothermally-generated sound.	NSF	Spring 1987		1	Add to Lonsdale/ Hessler Cruise **Tabled without review.**
5. Emerson, S.	Archer, D.	17N, 118-38W California Borderlands	Measure oxygen and PH profiles around benthic mounts; with Jumars/Smith investigations	NSF	November 1987	-	2	Coordinated with Jumars/Smith. **Tabled without review.**
6. Stakes, D.	Craig, H.	18N, 144-20E & 18-30N, 144-35E.	ALVIN/ANGUS investigation of off-axis volcanism in Mariana Trough.	NSF	March 1987	with Craig	5	(Addition to Mariana work scheduled earlier.) **Tabled without review.**
7. Deming, J.	Baross, J. McDuff, R. Lilley, M. Tuttle, J. Calwell, R. MacDonell, M.	48N, 130 W Endeavor Segment, Juan de Fuca Ridge	Operational test of in situ smoker sampler and samples for culturing thermophilic bacteria.	ONR	August 1987	Sept. 1987	8	(Add'l to Baross et al earlier recommended.) **Recommended 5 dives.**

1987

ALVIN OPERATIONS



NOTE: THE INTERNATIONAL DATE LINE IS CROSSED AT THE TIMES MARKED ▼
THE DATES IN PARENTHESES ARE LOCAL.